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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/784,860 | 02/23/2004 | Robert S. Dodsworth | 58065US008 | 9435 |

32692 7590 06/21/2005

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| EXAMINER |
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LAM, CATHY FONG FONG

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| ART UNIT | PAPER NUMBER |
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1775

DATE MAILED: 06/21/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|--------------------------------------|-----------------------------------------|--|
| Office Action Summary | Application No. 10/784,860 | Applicant(s) DODSWORTH ET AL. | |
| | Examiner Cathy Lam | Art Unit 1775 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 March 2005.
 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3 and 5-17 is/are pending in the application.
 4a) Of the above claim(s) 8-17 is/are withdrawn from consideration.
 5) ☐ Claim(s) _____ is/are allowed.
 6) ☒ Claim(s) 1-3 and 5-7 is/are rejected.
 7) ☐ Claim(s) _____ is/are objected to.
 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☐ All b) ☐ Some * c) ☐ None of:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date <u>5/16, 5/31 & 6/3</u> . | 6) <input type="checkbox"/> Other: _____ |

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In view of the Terminal Disclaimer filed on March 23rd 2005, the obviousness double patenting rejection has been withdrawn. The pending claims, however are continued to be unpatentable as following:

Election/Restrictions

1. Applicant's election of group I in the reply filed on March 23rd 2005 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).
2. This application contains claims 8-17 drawn to an invention nonelected with traverse in paper filed on March 23rd 2005. A complete reply to the final rejection must include cancellation of nonelected claims or other appropriate action (37 CFR 1.144). See MPEP § 821.01.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1, 3 and 6 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Gazit et al (US 5219640).

Gazit discloses a flexible circuit board that is useful in computer disc drives. The flexible circuit board is comprised of a dielectric substrate (12,20), an adhesive (14,18), and circuit lines (16).

The dielectric substrate (12,20) is a polyimide material such as Kapton (col 3 L 61-62 & L 68; col 4 L 3-4). The dielectric substrate (or polyimide layer) has a thickness of 25 μm . The flexible circuit board has a flexing section where the dielectric substrate has been thinned to less than 15 μm (col 8 L 25- & L 37-48). The removal of the polyimide layer in the flexing section can be done by chemical etching (col 5 L 22-27).

5. Claims 1-3 and 5-7 are rejected under 35 U.S.C. 102(e) as being anticipated by Yang (PG Pub 2002/0155280 A1).

Yang teaches a complex circuit structures such as unsupported cantilevered leads (paragraph 0027). A bonding adhesive such as polyimide is used between a base material and a metal layer (paragraph 0049). The base material has an original thickness of about 25-50 μm , is reduced to less than about 10 μm (paragraph 0051).

Yang teaches that polyimide can be used as dielectric base material (paragraph 0026). Polyimides are commonly used as based materials for flexible electronic packages (paragraph 0004 & 0005).

The applied reference has a common inventor and a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

Art Unit: 1775

6. Claims 1-3 and 5-7 are rejected under 35 U.S.C. 102(f) because the applicant did not invent the claimed subject matter. The structural limitation of dielectric film having a thickness is reduced from 25-50 μm to less than 10 μm or less, is clearly disclosed in the pre-grant publication (see paragraph 0051). The publication has only one inventor.

Claim Rejections - 35 USC § 103

7. Claims 1, 4-7, 9-10 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gazit et al (US 5219640) in view of Wolf et al (US 4847139).

Gazit discloses a flexible circuit board that is useful in computer disc drives. The flexible circuit board is comprised of a dielectric substrate (12,20), an adhesive (14,18), and circuit lines (16).

The dielectric substrate (12,20) is a polyimide material such as Kapton (col 3 L 61-62 & L 68; col 4 L 3-4). The dielectric substrate (or polyimide layer) has a thickness of 25 μm . The flexible circuit board has a flexing section where the dielectric substrate has been thinned to less than 15 μm (col 8 L 25- & L 37-48). The removal of the polyimide layer in the flexing section can be done by chemical etching (col 5 L 22-27).

Gazit teaches a flexible circuit board having a recessed region that has a thinner thickness of the dielectric film. Gazit however is silent about the polyimide material has a carboxylic ester group.

Wolf teaches a flexible circuit comprised of a base material and a conductive material.

The base material can be a polyimide film having the thickness from about 20 :m to 250 :m (col 2 L 44-48 & L 66-68 & col 3 L 1-2).

The conductive material is laminated onto the surface(s) of the base material (col 3 L 61-64).

The base material comprises functional groups such as carboxylic ester groups which could enhance adhesion to the substrate (co base) surface (col 5 L 27-34).

In view of the prior art teachings, one skill in the art would fabricate a flexible circuit board by choosing polyimide copolymer having carboxylic ester groups because it enhances adhesion between the substrate surface and the metallic foil.

Regarding to dielectric film having an orifice, the examiner takes the position that such structure is known in the printed wiring board field and the size of the orifice is just a matter of design choice.

8. Claims 1, 4-7, 9, 10 and 12 are rejected under 35 U.S.C. 103(a) as obvious over Yang et al (US 6403211).

Yang discloses a flexible circuit board comprised of a dielectric film and a copper conductive pattern (col 1 L 10-13).

The dielectric film can be a polyimide material (col 2 L 52-56). The copper pattern formed onto the surfaces of the dielectric film (col 6 L 32-42). The dielectric film has an initial film thickness of from about 25-125 μm (col 6 L 18-19).

Yang uses an alkaline etchant which comprises an alkali metal salt and a solubilizer, on the dielectric film for obtaining a desired dielectric film thickness.

Art Unit: 1775

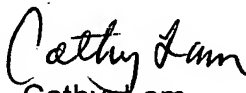
Yang teaches the present invention but is silent about the dielectric film is etched to a thickness of less than 25 μm (or less than 15 μm) from its original thickness.

However, in view of Yang's teaching, it would have been obvious that Yang's method could produce the same product as claimed by the applicant because the prior art uses the **same etchant** and **same processing steps & conditions** as disclosed by the applicant.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Cathy Lam whose telephone number is (571) 272-1538. The examiner can normally be reached on 9am-6pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Deborah Jones can be reached on (571) 272-1535. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Cathy Lam
Primary Examiner
Art Unit 1775

cfl
June 15th 2005